In the Claims:

Please amend the Claims as follows and without prejudice. This listing of Claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (CURRENTLY AMENDED) A miniature reaction chamber template structure for fabricating a nanoscale molecular system, comprising:

a first wafer of silicon,

a layer of borosilicate glass having oxygen ions at a surface thereof and being at least substantially adjacent to said wafer of silicon to form a composite structure, and

a plurality of channels, located between said glass and silicon interface, defining a plurality of reaction sites where said channels intersect, and having dangling bonds formed non-uniformly ~~preferentially at~~ including at least at said reaction sites for coupling to organic molecules to fabricate the nanoscale molecular system, and

an inlet opening for said channels at one end of said structure and an outlet opening for said channels at another end of said structure to enable the insertion of a fluid containing the organic molecules in said channels.

2. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 1 wherein said channels are located longitudinal to said structure and are directed from a first side to a second side in the X direction.

3. (ORIGINAL) The miniature reaction chamber according to claim 2 where in there are additional channels located in the Y direction and which are transverse to the X direction channels.

4. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 1 further including a second wafer of silicon at least substantially adjacent to said borosilicate glass layer to form a laminar structure having a top layer of silicon, a middle layer of borosilicate glass and a bottom layer of silicon.

5. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said channels are circular in cross section.

6. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said channels are rectangular in cross section.

7. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 4 wherein said borosilicate glass is deposited on said second silicon wafer.

8. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 1 wherein said borosilicate glass is joined to said first silicon wafer by a field assisted bond.

9. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 8 wherein said field assisted bond creates said oxygen ions in the borosilicate glass.

10. (ORIGINAL) The miniature reaction chamber according to claim 4 further including vertical conduits located in said top layer of silicon and in communication with said channels to enable a fluid to be introduced into said channels.

11. (ORIGINAL) The miniature reaction chamber according to claim 10 further including localized reaction areas positioned in said channels and capable of producing a high electric field wherein a voltage is applied to said structure.

12. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said channels include a metallized layer area.

13. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 1 wherein said channels are between 1 to 10 mils in diameter.

14. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said silicon is doped silicon.

15. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said silicon is intrinsic silicon.

16. (ORIGINAL) The miniature reaction chamber according to claim 1 wherein said silicon wafer is coated with silicon dioxide.

17. (PREVIOUSLY PRESENTED) The miniature reaction chamber according to claim 12 wherein said metal is selected from aluminum or gold.

18. (CURRENTLY AMENDED) An apparatus for fabricating a nanoscale molecular system using organic molecules, comprising:

at least one silicon wafer;

a layer of borosilicate glass being substantially adjacent to said silicon wafer to define a plurality of channels between said borosilicate glass and silicon wafer, said borosilicate glass having dangling bonds formed non-uniformly ~~preferentially~~ including at least at intersections of at least two of said channels and providing localized reaction sites for receiving the organic molecules; and,

at least one inlet opening for said channels for enabling the insertion of a fluid containing the organic molecules to be fabricated into the nanoscale molecular system into said channels.

19. (PREVIOUSLY PRESENTED) The apparatus of Claim 18, wherein said dangling bonds are associated with oxygen ions.

20. (PREVIOUSLY PRESENTED) An apparatus for fabricating nanoscale molecular systems, comprising:

at least one silicon wafer;

a layer of borosilicate glass being substantially adjacent to said silicon wafer to define a plurality of channels between said borosilicate glass and silicon wafer;

at least one inlet opening for said channels for enabling the insertion of a fluid containing organic molecules into said channels; and,

at least one edge protruding into at least one of said channels and being suitable for inducing a localized high electric field.

21. (NEW) The miniature reaction chamber according to claim 1, wherein at least one of said channels contains the fluid containing the organic molecules, wherein the organic molecules react with said dangling bonds at at least one of said reaction sites and generate a nanoscale molecular system.

STATUS OF CLAIMS

Claims 1 - 20 were pending prior to entry of this amendment. Upon entry of this amendment, claims 1-21 are pending.

Claims 1 – 20 stand finally rejected.

Claims 1 and 18 have been amended without prejudice herein.

New Claim 21 has been added.

The term "preferential" has been canceled from claims 1 and 18. While Applicant disagrees with the Examiner's position that the term "preferential" renders claims 1 and 18 unpatentable under 35 U.S.C. Section 112, first and second paragraphs, for the purpose of advancing prosecution, and without prejudice or disclaimer, this term has been canceled.

By the present amendment, it is stated that dangling bonds are formed "non-uniformly" in claims 1 and 18. Support for the amendments is found in the specification, for example, at Paragraph [0007], which states:

> It is clear that specific areas of the silicon can be chosen to have dangling bonds to promote localized reactions enabling a nanostructure to form in a specific spot within the reaction chamber. Such localized reaction areas may also be formed using various layers of metal on either the silicon or the glass structure.

It is clear from the wording "specific areas of the silicon can be chosen to have dangling bonds" teaches that dangling bonds form non-uniformly. The Examiner asserts that the mere use of field assisted bonding in a vacuum or inert atmosphere will inherently produce dangling bonds in all areas of the glass. Assuming arguendo that the Examiner is correct, Applicant's specification nevertheless teaches non-uniform distribution of dangling bonds, wherein "specific areas of the silicon can be chosen to have dangling bonds to promote localized

reactions." Providing dangling bonds at such specific areas has the effect of "enabling a nanostructure to form in a specific spot within the reaction chamber." The "specific spot" is of course a specific area chosen to have dangling bonds. Amended claims 1 and 18 reflect this distinction, by reflecting that the dangling bonds form non-uniformly.

Further specification support is found, for example, at Paragraph [0019], which teaches: "It is also envisioned that there will be an X-Y matrix of microtubes whereby each of the microtubes form an X-Y grid and therefore fluids can be injected at any point in X-Y grid to enable a fluid to reach a cross point or a local area. At this local area, there would be a small spot or opening. At this spot, there would be dangling oxygen bonds." Thus, Paragraph [0019] teaches dangling oxygen bonds at a cross point, i.e., an intersection, of a matrix, and thus forming dangling bonds non-uniformly.

Paragraph [0020] teaches "The intersection between pipe 44 and pipe 45 creates a cross point 40, which is a localized area in the glass or silicon, where fluid can be introduced to the pipe. At the localized area, the molecule will exist and by the use of electric fields or other devices, one can now cause the migration of sodium ions and therefore produce oxygen ions which are dangling at that location."

Specification support for new claim 21 is found, by way of example, in Paragraph [0019] of the specification.